

A. In the invention, the depletion mode is created through application of voltages.

Claim 29 recites that the semiconductor decoupling capacitor in consequence of providing signals of particular voltages to the gate and body. Specifically, claim 29 recites:

“a semiconductor decoupling capacitor to provide decoupling capacitance between the first and second conductors, the semiconductor decoupling capacitor including:

- (a) a gate electrode coupled to the first conductor to receive the power supply voltage,
- (b) a diffusion coupled to the second conductor to receive the ground voltage, and
- (c) a body to receive the ground voltage through the diffusion, the semiconductor decoupling capacitor thereby being in depletion mode.” (Emphasis added.)

Likewise, claim 40 recites:

“a semiconductor decoupling capacitor to provide decoupling capacitance between the first and second conductors, the semiconductor decoupling capacitor including:

- (a) a gate electrode coupled to the second conductor to receive the ground voltage,
- (b) a diffusion coupled to the first conductor to receive the power supply voltage,
- (c) a body to receive the power supply voltage through the diffusion, the semiconductor decoupling capacitor thereby being in depletion mode,”

B. In Manning et al., the depletion mode is created by a reduced the threshold voltage (Vt), not through the application of voltages as recited in the claims.

In contrast to the claims, Manning et al. does not teach achieving a depletion mode semiconductor decoupling capacitor through applying the specified voltages, but rather through reducing the magnitude of the threshold voltage (Vt).

For example, Manning et al. (Abstract, lines 12-13) states: “By sufficiently reducing Vt magnitude, a depletion mode MOS capacitor is formed.”

Throughout Manning et al., a reduced threshold voltage (Vt) is equated with depletion mode. For example, the phrase “reduced magnitude Vt or depletion mode PMOS capacitors” appears in many places throughout the specification of Manning et al. to suggest that a reduced magnitude Vt is the same as a depletion mode PMOS capacitor. (See, for example, col. 3, lines 3-4; col. 4, lines 55-56 and lines 63-64; col. 4, line 67 – col. 5, line 1, etc.) The specification of Manning et al. does not explain any other way of achieving depletion mode.

Manning et al. does not teach the particular combination of voltages recited in the claims. Specifically, Manning et al. does not teach “(a) a gate electrode coupled to the first conductor to receive the power supply voltage, (b) a diffusion coupled to the second conductor to receive the

ground voltage, and (c) a body to receive the ground voltage through the diffusion, the semiconductor decoupling capacitor thereby being in depletion mode” as recited in claim 29. Likewise, Manning et al. does not teach (a) a gate electrode coupled to the second conductor to receive the ground voltage, (b) a diffusion coupled to the first conductor to receive the power supply voltage, (c) a body to receive the power supply voltage through the diffusion, the semiconductor decoupling capacitor thereby being in depletion mode, ...” as recited in claim 40.

The APA also does not teach these limitations of the claims. As the Office action, p. 2, states: “APA does not teach that the first conductor coupled to the gate electrode carries a power supply voltage and a second conductor coupled to the diffusion carries a ground voltage, the semiconductor decoupling capacitor thereby being in depletion mode.” Since the APA and Manning et al. do not teach these limitations either alone or in combination, the rejection of claims 29 and 40 should be withdrawn.

Further, the dependent claims include various additional limitations not taught by the APA and Manning et al., either alone or in combination. For example, claims 35, 39, 46, and 50 recite the semiconductor decoupling capacitor has a flatband voltage and wherein the power supply voltage has a smaller absolute value than does the flatband voltage. The flatband voltage was understood before the invention and having power supplies of less than 1 volt have been proposed before this invention. However, these claims combine this power supply voltage with depletion mode capacitors created through the application of voltages and these claims should be allowed.

C. The cases cited in the Office action do not support eliminating claim limitations.

The Office action, pp. 3-4, states:

“Furthermore, claims directed to apparatus must be distinguished from the prior art in the terms of structure rather than function.” [Citing In re Danly.] [A]pparatus claims cover what a device is, not what a device does. [Citing Hewlett-Packard Co. v. Bausch & Lomb Inc.]

A claim containing a ‘recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus’ if the prior art teaches all the structural limitations of the claim. [citing Ex parte Masham].”

In Re Danly, 120 USPQ 528 (CCPA 1959), concerned whether certain claims were patentable over the prior art. Claim 1 was directed to a power press tie rod heating system and at the conclusion of a listing of structural elements recited “the construction being such that

alternating electric current may be passed through the tie rod to heat the same.” 120 USPQ at 529. The CCPA stated:

“Claims 1 and 2 are not limited to the actual use of alternating current. Those claims call for a press structure in which the tie rods are insulated from the frame and in which the construction is ‘such that alternating current may be passed through the tie rod to heat the same.’ It is evident that the quoted expression does not constitute a structural limitation, since an alternating current *may* be passed through any tie rod which is insulated from the press frame. * * *

“In view of the references of record, appellant’s invention does not reside in a press in which it is *possible* to pass alternating current through the tie rods to heat them, but in a method and apparatus in which that is actually done. Claims drawn to an apparatus must distinguish from the prior art in terms of structure rather than function. [Citations omitted.] It follows that claims 1 and 2 fail to define a patentable distinction over the patents on which they stand rejected, and were properly rejected for that reason.” 120 USPQ at 531 (emphasis in original.)

In contrast to In re Danly, in this present application, claims 29 and 40 do not state the capacitor may be operated to be in depletion mode, they state the decoupling capacitor is in depletion mode (“the semiconductor decoupling capacitor thereby being in depletion mode.”) Accordingly, the depletion mode feature is a limitation to the claim. Indeed, it is central to the invention.

In, Hewlett-Packard Co. v. Bausch & Lomb, Inc., 15 USPQ2d 1515, 1528 (Fed. Cir. 1990), claim 1 of the LaBarre patent concerned an X-Y plotter system. The LaBarre patent was owned by Hewlett-Packard (HP) and was infringed by Bausch & Lomb (B&L). On the subject of obviousness, the Federal Circuit stated:

“The critical language is the last clause of claim 1: ‘wherein the rough surface ... has a random pattern, size, and height of rough spots.’ B&L agrees that the use of grit provides great advantages over a knurled wheel. * * * However, B&L maintains that claim 1 does not specifically recite ‘grit,’ that it is improper to read the limitation of ‘grit’ into the claims, and that therefore whatever unobvious advantages may be realized by the use of grit are irrelevant. Since, argues B&L, the use of a ‘random pattern, size and height of rough spots’ on the wheel does not provide an ‘operational difference’ over a knurled wheel, this limitation in claim 1 does not render claim 1 unobvious over Yeiser.

“We find this argument without merit. The above-described language from claim 1 is a reasonable description of what ‘grit’ is * * *.

“Secondly and more importantly, there is no requirement, as B&L implies, that HP show ‘operational differences’ of the claimed device over the prior art. Claim 1 of LaBarre is an apparatus claim, and apparatus claims cover what a device *is*, not what a device *does*. An invention need not *operate* differently than the prior art to be patentable, but need only *be* different.” 15 USPQ2d at 1527-28 (Emphasis in original.)

The facts of Hewlett-Packard have no real applicability here. If the Office action were saying applicants had to show 'operational differences' of the claims 29 and 40 over the prior art, then this case might be applicable. However, the Office action is not saying that. Rather, the Office action is saying that some words of the claims are not limitations. This situation was not discussed in Hewlett-Packard. The claims are structurally different from the APA and Manning et al. The placement of power and ground voltage conductors and body, gate, and source/drain types is different in some claims than in FIG. 1 (APA) and Manning et al. Table 1, below, clearly shows the structural differences.

	Mode	Gate Voltage	Body Voltage	Body type	Gate type	S/D Type	Diff-usion Type	Example Figures
FIG. 1	Inversion	Ground	Power	n-type	p-type	p-type	n-type	FIG. 1
FIG. 9	Inversion	Power	Ground	p-type	n-type	n-type	p-type	FIG. 9
Claim 29	Depletion	Power	Ground					FIGS. 5, 6
Claim 30	Depletion	Power	Ground	n-type	p-type		n-type	FIGS. 5, 6
Claim 31	Depletion	Power	Ground	n-type	p-type			FIGS. 5, 6
Claim 32	Depletion	Power	Ground					FIG. 5
Claim 36	Depletion	Power	Ground	n-type	p-type	p-type	n-type	FIG. 6
Claim 40	Depletion	Ground	Power					FIGS. 11, 12
Claim 41	Depletion	Ground	Power	p-type	n-type		p-type	FIGS. 11, 12
Claim 42	Depletion	Ground	Power	p-type	n-type			FIGS. 11, 12
Claim 43	Depletion	Ground	Power					FIG. 11
Claim 47	Depletion	Ground	Power	p-type	n-type	n-type	p-type	FIG. 12

Table 1

The Office action also cites In Ex Parte Masham, 2 USPQ2d 1647 (Bd. Pat App. & Inter. 1987), in which claim 1 recited:

"1. An apparatus for mixing flowing developer material, including:
means defining a chamber, for receiving the flow material developer material therein; and
means for mixing the following developer material, said mixing means being stationary
and completely submerged in the developer material." (Emphasis added.)

By contrast, in the reference (Williams), the “mixing means is depicted ‘as only being partially submerged in the developer material’” Id. at 1648. The Board noted:

“At any rate, a recitation with respect to the material intended to be worked upon by a claimed apparatus does not impose any structural limitations upon the claimed apparatus which differentiates it from a prior art apparatus satisfying the structural limitations of that claimed. [citation omitted] Similarly, a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of that claimed.” Id. (Emphasis added.)


The situation in Masham is different in that of the present invention. In Masham, the claim recites the apparatus is completely submerged. Nothing like that is involved in the present application. Unlike the “submerging” limitation of claim 1 of Masham, the limitations of the claims of the present application are part of a unified whole. None of the limitations of claims 29 and 40 can be ignored.

Claims 30-31, 36-39 & 43-45. The basis of the rejections of claims 30-31, 36-39 & 43-45 is not stated. Accordingly, the basis should be stated or the rejections be withdrawn. Further, these claims are dependent on allowable claims 29 or 40 are and also allowable.

Applicants believe the application is in condition for allowance and respectfully request the same.

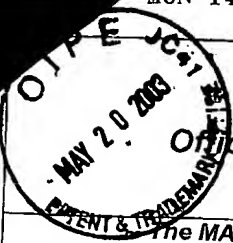
Respectfully submitted,

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Office Action Summary

Application No.

09/469,406

Applicant(s)

KESHAVARZI ET AL.

Examiner

Donghee Kang

Art Unit

2811

The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 November 2002.
- 2a) ☐ This action is FINAL.
- 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 21.

Disposition of Claims

- 4) ☒ Claim(s) 29-50 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 29-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1443) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: